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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,400	05/18/2005	Volker Hennige	271320US0PCT	4418
22850 7590 09/09/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER ALEJANDRO, RAYMOND				
ART UNIT 1795		PAPER NUMBER		
NOTIFICATION DATE 09/09/2009		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/535,400

Applicant(s)

HENNIGE ET AL.

Examiner

Raymond Alejandro

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/24/09.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 and 30-35 is/are pending in the application.
- 4a) Of the above claim(s) 20-28, 30 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 32-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 05/15/09.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application.
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This office action is responsive to the amendment filed 06/24/09. The applicant has overcome most of the 35 USC 112 rejections only. None of the prior art rejections has been satisfactorily overcome by the applicant. Refer to the abovementioned amendment for specific details on applicant's rebuttal arguments and remarks. Hence, all pending claims (including new claims 32-35) are finally rejected over the same grounds of rejection and new grounds of rejection (for claims 32-35) art as composed hereinbelow and for the reasons of record:

Election/Restrictions

1. Claims 20-28 and 30-31 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 02/12/09 and 12/04/09.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 05/15/09 was considered by the examiner.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-19 and 32-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The **amended** language "*the first porous ceramic material is covered a second layer*" in claim 1 is semantically awkward and of uncertain meaning, thereby rendering the scope of the claim vague. Currently, it is unclear whether "*the first porous ceramic material is covered with a second layer*..." or "*the first porous ceramic material covers the second layer*"; and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Note that each one carries a totally different interpretation.

6. Furthermore, claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for: a) omitting essential elements, such omission amounting to a gap between the elements; and/or b) for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted elements and/or structural cooperative relationships are: the recitation "may comprise an ion-conducting electrolyte" does not require the presence of an electrolyte, that is, it is optionally recited. However, limitation (C) calls for "*an electrolyte-contactable pore surface of the first layer of the first porous ceramic material is covered a second layer*...". Since no electrolyte is required or recited therein, it is increasingly unclear how the first layer and/or second layer would be accommodated on the support if the electrolyte is included, or "further" included or if it "comprises an electrolyte" per se. Note that this is critical for understanding the scope of the claim in terms of the ultimately intended structure and/or layer arrangement. So far, a reasonable interpretation is that the second layer can be deposited within the pore surface of the

first layer of the first porous ceramic material. As best understood, and as a result thereof, it is not unreasonable to conclude that the present claims may comprise a single layer structure at all (i.e. second layer formed inside the pores of the first layer) and/or a two layer structure (i.e. second layer formed over the first layer).

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/536270. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

Copending application'270 claims the following subject matter (CLAIMS 1-18):

1. A separator for an electrochemical cell, comprising (A) a flexible perforate support, and (B) a porous ceramic material which fills the perforations in the support and is suitable for receiving an ion-conducting electrolyte, characterized in that the porous ceramic material comprises a first porous layer which is

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characterized by an average pore size and also at least one second porous layer for contacting with an electrode, the second porous layer having an average pore size which is 15 smaller than the average pore size of the first porous layer.

2. The separator of claim 1, characterized in that the porous ceramic material comprises on that side 20 of the first porous layer which is opposite the side of the second porous layer a third porous layer for contacting an electrode of opposite polarity, the third layer having an average pore size which is less than the average pore size of 25 the first layer.

3. The separator of claim 1, characterized in that the average pore size of the second and/or optionally the third layer is in the range from 30 0.i to 50% of the average pore size of the first layer.

4. The separator of any preceding claim, characterized in that the average pore size of the first 35 layer is in the range from 80 to 1 000 nm and especially in the range from 450 to 800 nm.

5. The separator of any preceding claim, characterized in that the average pore size of the second layer and optionally of the third layer is in the range from 5 to 250 nm and especially in the range from 25 to 150 nm.

6. The separator of any preceding claim, characterized in that between the first and second layers and/or optionally between the first and third layers there is or are disposed one or more inter-layers whose average pore sizes are each less than the average pore size of the adjacent layer which is in the direction of the first layer and greater than the average pore size of the layer which is in the direction of the electrode assigned this side.

7. The separator of any preceding claim, wherein the porous ceramic material comprises an oxide of zirconium, silicon and/or preferably aluminum.

8. The separator of any preceding claim, wherein the ceramic material is producible by solidifying a slip which contains particles having a large average particle size which determine the pore structure of the ceramic material and also particles having a smaller average primary particle size which adhere the large particles together in the course of the solidification of the slip.

9. The separator of claim 8, wherein the surface of the particles which form the layers additionally comprise SiO₂, Al₂O₃, ZrO₂ or SiC.

10. The separator of any preceding claim, wherein the layers comprise Li₂CO₃, Li₃N, LiAlO₃, or Li_xAl_yTi_z(PO₄)₃ where $1 \leq x \leq 2$, $0 \leq y \leq 2$ and $1 \leq z \leq 2$.

11. The separator of any preceding claim, comprising an electrolyte for ion conductance.

12. The separator of any preceding claim, having a 5 porosity of 15 to 80% and preferably of 20% to 45%.

13. The separator of any preceding claim, wherein the perforate support comprises polymeric fibers, preferably selected from fibers of polyamide, polyacrylonitrile, polyester and/or polyolefin, glass fibers or ceramic fibers.

14. The separator of any preceding claim, wherein the 15 support comprises fibers and/or filaments from 1 to 150 μ m and preferably from 1 to 20 μ m in diameter and/or yarn from 3 to 150 μ m and preferably from 10 to 70 μ m in diameter.

5. The separator of any preceding claim, wherein the support is non-woven having a pore size from 5 to 500 μ m and preferably from 10 to 200 μ m.

16. The separator of any preceding claim that is stable under service conditions at not less than 100°C, preferably at not less than 150°C and most preferably at not less than 180°C.

17. The separator of any preceding claim from 10 to 1000 μ m, preferably from 10 to 100 μ m and most preferably from 10 to 50 μ m in thickness.

18. The separator of any preceding claim that tolerates a bending radius down to 100 mm, preferably down to 20 mm and most preferably down to 1 mm.

In this case, the subject matter of the copending application'270 appears to fully

encompass and read on the subject matter of the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-4 and 6-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Penth et al 2002/0023874.

As to claim 1:

Penth et al disclose a permeable composite material (Abstract) useful as a separating membrane or in applications related to filtration or membrane technology (Abstract/P0063) comprising a porous permeable support which is flexible (Abstract/P0010-0012/0057/CLAIM 1) which is coated with a porous ceramic material and fine particles of another material (P0016, 0021, 0027, 0037, 0051-0052, 0054). **EXAMPLES 1.1-1.19, 2.1-2.8 and 3.1-3.3** exemplify embodiments comprising a porous substrate/support being coated with plural components. It has been disclosed that the permeable composite/carrier (or support) is permeable for substance with a particle size of between 0.5 nm to 500 µm (P0014, 0018); between 0.5 nm to 10 µm (P0023). Penth et al discuss the gap sizes (relationship between the porosity of the disclosed materials) (P0024); and in particular, two particle size fractions and particle size proportions or ratios of between 1:1 and 1:10000, preferably between 1:1 and 1:100, and preferably between 1:1 and

1:0.1 (**P0029-0030, 0043, 0056**) where the smaller particle size should not exceed a proportion of 50 % at mist, preferable 20 % and especially preferably 10 % (**P0056**). Penth et al also discuss a pore gradient (P0055). It is disclosed that the coating material is applied onto or into the perforated support (P0037).

As to claims 2-3:

Penth et al disclose the use of ceramic or inorganic layers applied to the support/carrier (P0051) where the same or different materials can be used, alone or in combination (P0051-0052, **0028**, 0053)

As to claims 4 and 11:

Penth et al use for coating/layer purposes, alone or in combination, the following materials: Al_2O_3 , SiO_2 , ZrO_2 and/or SiC (P0028, 0043 & 0052); oxides of Al and/or Zr can be specifically used (P0052).

As to claim 6:

The permeable composite material of Penth et al is comprised of multiple materials, thereby any one of those materials can exhibit electrolytic behavior(Abstract).

As to claims 7-9:

Penth et al discuss a layer material including a powder having a particle size of between 1 and 1000 nm (1 nm and 1 μm) (P0054). It is also disclosed that a compound with a particle size of 5 μm can be applied to the carrier/support (P0055). A coating of a porous ceramic material and fine particles of another material is applied on the support (P0016, 0021, 0027, 0037, 0051-0052, 0054). **EXAMPLES 1.1-1.19, 2.1-2.8 and 3.1-3.3** exemplify embodiments comprising a

porous substrate/support being coated with plural components. It is disclosed that the coating material is applied onto or into the perforated support (P0037).

As to claim 10:

Penth et al discuss the gap sizes (relationship between the porosity of the disclosed materials) (P0024); and in particular, two particle size fractions and particle size proportions or ratios of between 1:1 and 1:10000, preferably between 1:1 and 1:100, and preferably between 1:1 and 1:0.1 (**P0030, 0043, 0056**) where the smaller particle size should not exceed a proportion of 50 % at mist, preferable 20 % and especially preferably 10 % (**P0056**). Penth et al also discuss a pore gradient (P0055).

As to claim 12:

As to the method limitation, (*i.e. produced by solidifying a slip or in the course of the solidification step*), it is noted that a method limitation incorporated into a product claim does not patentable distinguish the product because what is given patentably consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made. As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any different, the difference would have been minor and obvious.

Determination of patentability of a product-by-process claim is based on the scope of the product itself. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even

though the prior product was made by a different process.” In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.

As to claim 13-16:

The porous carrier/support of Penth et al can be made of glass, ceramic and or natural fibers and/or plastic materials or ceramically bound fibers (P0024) including glass, metal and polymer fibers (P0025) with preferably mesh size (correlated to a diameter) of between 70-120 μm (P0025). An expanded metal with a pore size of 3-60 μm can be used as the carrier/support (P0026).

As to claim 17:

Since the separator of Penth et al is made of substantially the same materials as the one claimed by the applicant (i.e. flexible porous support coated with a ceramic layer and fine particles deposited therein and including specific porosity characteristic, it is contended that products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property (i.e. *being stable under conditions at not less than 100 °C*), is necessarily present in the prior art material. “Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). *See MPEP 2112.01 [R-3] Composition, Product, and Apparatus*

Claims

As to claim 18:

The layer thickness of Penth et al's separator is 10 μm (P0091). *Thus, Penth et al cover the claimed thickness.*

As to claim 19:

The permeable composite of Penth et al can be bent to a radius of up to 100 mm (P0016, 0019).

Thus, the present claims are anticipated.

11. **(at least)** Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by the German publication DE 10115928 (herein called the DE'928).

As to claims 1-4:

The DE'928 discloses a proton conducting electrolyte membrane (*taken to represent a separator*) comprising a porous substrate containing glass fibers or filaments coated with a ceramic material such as SiO_2 and Al_2O_3 and a material comprising particles (P0018-0025, 0038-0041, 0046, 0059/CLAIMS 1, 8-15 and Examples 1.9, 2.1 and 2). The relationship between the porous materials is disclosed in P0026-0028, in particular, there is disclosed fine particles of a material incorporated into the porous substrate/ceramic material wherein the porosity thereof is 20 % of the average pore size of the porous substrate/ceramic material (P0026-0028). Porosities ratios are disclosed (P0044-0046). *The electrolyte material is the ceramic material itself*

Thus, the present claims are anticipated.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Penth et al 2002/0023874 as applied to claim 2 above, and further in view of Visco et al 2004/0126653.

Penth et al is applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference does not disclose the specific fine particles of claim 5.

Visco et al disclose the formation of a Li_3N layer, among other materials, on the surface of a glass-ceramic material which is used as a protective composite separator in a electrochemical device (P0065/CLAIMS 1, 19 and 25/Abstract).

In view of the above, it would have been within the purview of a skilled artisan at the time the invention was made to form the Li_3N layer of Visco et al on the surface of the ceramic material of Penth et al as Visco et al teach that such a layer and material produces a composite separating material usable in batteries that has the desired properties of high overall ionic conductivity and chemical stability towards the anode, the cathode and ambient conditions encountered in battery manufacturing. As such, the composite separating material is capable of protecting an active anode material from deleterious reaction with other battery components or ambient conditions while providing a high level of ionic conductivity to facilitate manufacture and/or enhance performance of a battery in which the composite material is incorporated.

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Penth et al 2002/0023874 as applied to claim 2 above, and further in view of Michot et al 2008/0213661.

Penth et al is applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference does not disclose the specific fine particles of claim 5.

Michot et al conceptualize using a dispersion of solids in the forms of powders (e.g. particles) including LiAlO_2 and/or ceramic fibers in form of a layer as an additive to a solid electrolyte (P0042). Lithium nitride are also suitable for this purpose (P0042). The addition of these additives enhance properties of the solid electrolyte and confer improved mechanical characteristics to the finished product (P0042). Michot et al suggest forming a thin film of the

solid electrolyte (*the separator*) with the additive (Abstract). Michot et al discuss electrolyte for batteries (P0007). *In this case, the solid electrolyte is taken to represent a separator or separating member in the battery as it separates the anode from the cathode.*

In view of the above, it would have been within the purview of a skilled artisan at the time the invention was made to use the LiAlO_2 and/or lithium nitride of Michot et al on the surface of the ceramic material of Penth et al as Michot et al teach that such a material can be used as an additive to solid electrolytes for enhancing their properties and improving mechanical characteristics to the finished product.

17. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Penth et al 2002/0023874 as applied to claim 1 above, and further in view of any one of: a) Cozzette et al 6306594; and/or b) Savariar-Hauck et al 2002/0187425; and/or c) McCormack et al 2002/0117256.

Penth et al is applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference does not disclose the specific adhesion promoters.

- **Cozzette et al** discloses that it is known in the forming a coating or layer on electronic devices (Abstract) to use silane compounds such as 3-aminopropyltriethoxysilane to promote adhesion on a structure comprising layers (paragraph bridging columns 26-27).

- **Savariar-Hauck et al** disclose that it is known in the art of forming a coating or layer to include adhesion promoting materials or layers such as such as alkoxy-silanes, aminopropyltriethoxysilane, glycidoxypropyltriethoxysilane (*a glycidyl-grup*) and epoxy functional polymers for the benefit of enhancing adhesion (0028).

- **McCormack et al** discloses that is known in the art of fabricating flexible circuit structures including layered materials to coat or treat the same with a strongly adhesive layer (or surface) and/or adhesion promoter such as HMDS or DuPont's A-1100 (γ -aminopropyltriethoxysilane in order to ensure conductive laminate adhesion (0088).

In view of the above, it would have been within the purview of a skilled artisan at the time the invention was made to use the specific adhesion promoters of any one of Cozzette et al, Savariar-Hauck et al and/or McCormack et al in the ceramic layer material of Penth et al as Cozzette et al, Savariar-Hauck et al and/or McCormack et al, alone or collectively, teach that such a particular adhesion promoter is useful for enhancing or promoting adhesion in layers of materials.

Response to Arguments

18. Applicant's arguments filed 06/24/09 have been fully considered but they are not persuasive.

19. Applicant's first allegation of patentability is premised on the assertion that "*the separator of the present claims provides significantly improved performance when used in a battery. Applicant's draw the office's attention to Reference example 1 on pages 31-32; Inventive example 3 on pages 33-34; and Test Examples 1 and 2 on pages 34-36...*". However, in making such allegation, applicant is "explicitly" contending that "*Inventive example 3 is encompassed by present claim 1*". However, the evidence of secondary consideration such as the aforementioned unexpected results are not commensurate in scope with the claimed invention. It is as simple as that. Nowhere in the present claims do they recite or include the specific components, materials, compositions, physical characteristics and/or structural arrangement encompassed by Inventive

example 3 (i.e. *the PET nonwoven support, 1 % wt suspension of finely divided ZrO₂, the specific materials i.e. methyltriethoxysilane/tetraethoxysilane/dynasilane glymo, alumina oxides, weight basis of 6 g/m², average pore size of 450 nm, thickness of 30 μm and/or the like*). Furthermore, in arguing that the “*Test Example 1 ... describes a lithium battery...*”, applicant is conveniently ignoring the implication of the ***synergistic effects*** of ALL battery components therein. No technical or sound discussion regarding the same has been provided whatsoever by the applicant to at least show or demonstrate that ALL unexpected results or superior characteristics can be FULLY attributable to the embodiment of inventive example 3 which is not even nearly recited in any one of the present claims as a whole.

Succinctly stated, applicant has not demonstrated yet that the **claimed subject matter as a whole** imparts unexpected results. In re Klosak, 455 F.2d 1077, 1080, USPQ (CCPA 1972)(The appellants have the burden of showing that the claimed subject matter imparts unexpected results.); In re Heyna, 360 F.2d 222, 228, 149 USPQ 692, 697 (CCPA 1966) (“ it is incumbent upon appellants to submit clear and convincing evidence to support their allegation of unexpected property.”). Although that inventive example appears to show some improvement, the applicant again has not provided any evidence, much less any explanation, as to why this limited showing is sufficient to support, for example, the multifarious separators encompassed by ALL of the unclaimed materials or characteristics currently recited in the present claims. Thus, it cannot be said that the applicant has carried his/her burden of showing that **the claimed subject matter as a whole** imparts unexpected results, thereby rebutting the prima facie case established by the examiner.

20. Applicant's second and third allegations of patentability are premised on the assertion "*that the art of record does not disclose or suggest that the inclusion of a second layer of fine particles covering a first layer of a first porous ceramic material*" and that apparently the art of record does not show or disclose "*the average pore size of the ceramic material*".

In response, with respect to "*the inclusion of a second layer of fine particles covering a first layer of a first porous ceramic material*", the examiner is reluctant to believe that the present claims as amended do recite or include such a specific limitation. In fact, there is no requirement that the second layer be covering the first layer as the first layer comprises pores, and thus, it is possible to deposit the material of the second layer within or inside the first layer pore. Additionally, it appears that claim 1 does omit: a) essential elements, such omission amounting to a gap between the elements; and/or b) essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See rejection under Section 112 *supra*. Notice that a reasonable interpretation is that the second layer can be deposited within the pore surface of the first layer of the first porous ceramic material. Consequently, it is not unreasonable to conclude that the present claims may comprise a single layer structure at all (i.e. second layer formed inside the pores of the first layer) and/or a two layer structure (i.e. second layer formed over the first layer).

In response, with respect to "*the average pore size of the ceramic material*", note the prior art of record and the art rejections per se show the following: Penth et al discuss the gap sizes (relationship between the porosity of the disclosed materials) (P0024); and in particular, two particle size fractions and particle size proportions or ratios of between 1:1 and 1:10000, preferably between 1:1 and 1:100, and preferably between 1:1 and 1:0.1 (P0029-0030, 0043,

0056) where the smaller particle size should not exceed a proportion of 50 % at mist, preferable 20 % and especially preferably 10 % (**P0056**). Penth et al also discuss a pore gradient (P0055). Likewise, the DE'928 discloses the relationship between the porous materials in P0026-0028, in particular, there is disclosed fine particles of a material incorporated into the porous substrate/ceramic material wherein the porosity thereof is 20 % of the average pore size of the porous substrate/ceramic material (P0026-0028). Porosities ratios are disclosed (P0044-0046).

21. Since applicant did not address the double patenting rejection, the same has been maintained herein for the reasons of record, and at least until there is a positive and clear discussion thereof for the reasons of record. To date, the examiner contends that the double patenting rejection is sustainable as no argument or evidence against it has been advanced by the applicant.

Conclusion

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action (*for claims 32-35*). Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/
Primary Examiner, Art Unit 1795